CalNex Forecast Notes - Sunday, May 2, 2010

California Synoptic Overview - Jason Branz (jbranz@arb.ca.gov)

Sunday May 2
- Ridge axis along the coast
- N/NW transport flow in the Sac/San Joaquin Valleys
- Weak offshore this morning for SoCal coast

Monday May 3
- Ridge is pushed south by a trough in the PacNW
- Transport flow turns more westerly
- Models in more agreement with breaking down the ridge
- Weak offshore Monday morning for SoCal coast, turning onshore late
- Good onshore flow through the Delta into Sac/SJ valleys

Tuesday May 4
- Trough over PacNW pushes ridge farther south
- Westerly transport flow
- Onshore flow at the surface for both north and south
- Marine layer/coastal stratus south of Pt Conception

Wednesday May 5
- PacNW trough drops SE
- Transport flow turns W/NW

Thursday - Friday
- Weakening zonal transport, increasing concentrations
- Higher concentrations Friday

Comments on Local Features and Potential Targets

Tuesday - Potential P3 Flight day
AQ may be in the Unhealthy for Sensitive Groups (USG) range in southern SJV (Kern County).
Transport from Southern SJV to SE Deserts

Long-range transported polluted air moves South Eastward over LA at 500m. Moderate (5-10ppbv/day) background O3 production over LA.

Potential flights of interest:
LA Basin with continental transport aloft

air flow between SJ Valley and Mojave Desert

Large Scale Transport Notes - Brad Pierce

LA AIRNOW Site Comparison/Ensemble Trajectories:
- Good O3 AQ during FX period
- Moderate PM2.5 AQ during FX period
- RAQMS tends to underestimate poor O3 and PM2.5 AQ events in Riverside-San Bernardino
- Large-scale transport of LA Ensemble shifting from South Eastward to South during FX period (Mon-Wen)

SF AIRNOW Site Comparison/Ensemble Trajectories:
- Good O3 AQ during FX period
- Good to Moderate PM2.5 AQ during FX period
- Large-scale transport of SF Ensemble shifting offshore over Southern CA during FX period (Mon-Wen)

Note: LA and SF Ensemble Initialized 00Z 05/03 off shore near CA/MX border on 00Z 05/04 (Monday afternooon)

500m Reverse Domain Filling 00Z 05/03 (Sun Afternoon)
- Moderate (~60ppbv) O3 and PM2.5 at 500m over Central CA due to Lagrangian mean descent of long-range transported air
- Moderate (5-10ppbv/day) background O3 P-L off shore South of LA

500m Reverse Domain Filling 00Z 05/04 (Mon Afternoon)
- Moderate (~60ppbv) O3 and PM2.5 at 500m over Central CA coast due to Lagrangian mean descent of long-range transported air
- Moderate (5-10ppbv/day) background O3 P-L over LA

500m Reverse Domain Filling 00Z 05/05 (Tues Afternoon)
- Long-range transported air moves South Eastward over Southern CA at 500m. New polluted airmass descending in over Northern CA
- Moderate (5-10ppbv/day) background O3 P-L over LA

500m Reverse Domain Filling 00Z 05/06 (Wen Afternoon)
- New long-range transported polluted air over Point Conception at 500m
- Weak (~5 ppbv/day) background O3 P-L East of LA

Note: Comparison of RAQMS vs GFS 84hr 850mb windspeed and heights FX Valid 00Z 05/05 (Tues afternoon) shows generally good agreement off shore of CA with broader wind field off shore of WA/OR coast

Forecast Details

San Francisco Bay Area - NO FORECAST TODAY (for met features see COAMPS slides in Southern Coastal Waters section)

Note:
smaller red font in parenthesis e.g., (10kt) indicates prediction from previous forecast which differs from the forecast today

Sacramento Valley - NO FORECAST TODAY (for met features see COAMPS slides in Southern Coastal Waters section)

Note:
smaller red font in parenthesis e.g., (subsiding N wind limit downslope flow to eastern SV) indicates prediction from previous forecast which differs from the forecast today

San Joaquin Valley - Sean Ferreria [sean.ferreria@valleyair.org]

Winds

San Joaquin Valley Winds

SUNDAY MAY 2
Surface Winds (CANSAC 00Z): Strong to moderate N flow predicted across the Delta and strong NW to N flow over Altamont Pass predicted throughout the day. Forecast does not appear to show flow from SFBA toward SJV, moreso from SAC. Typical daytime upslope flow and nighttime/early morning downslope flow near the mountain regions in Tulare and Kern Counties. Moderate N flow predicted near the valley floor/ mountain interface on the west side from Kings County northward throughout the day. Area of convergence between Kern/SLO/Ventura counties. Light flow between SJV and Deserts.

MONDAY MAY 3
Surface Winds (CANSAC 00Z): Light to moderate W flow through the Delta (onshore flow) predicted throughout the day. Light W flow over Altamont Pass predicted in the early morning becoming light SE and then E by 17:00. Interesting convergence feature noted near Pacheco Pass by Monday afternoon. Typical daytime upslope flow and nighttime/early morning downslope flow near the mountain regions. Light SE and NE flow predicted in Kern County and light SE and variable flow across the rest of the SJV in the morning. Flow predicted to become light NW to light variable by 17:00.

TUESDAY MAY 4
Surface Winds (NAM/ETA 12Z): Surface charts show relaxed pressure gradients in the morning tightening by evening. NW winds around 10 mph forecast across SJV.

Increasing onshore flow through Pacheco Pass and Delta. Ventillation will be through Desert and Kern/SLO boundary. (interesting feature to capture: air exchanges between SJV Deserts and SLO, So Coast.)
http://www.rap.ucar.edu/weather/model/displayMod.php?var=eta_sfc_mslp&hours=hr72hr84

WEDNESDAY MAY 5
Surface Winds (GFS 00Z): Surface charts show tightening pressure gradients with W winds around 10 mph forecast across SJV. http://www.rap.ucar.edu/weather/model/displayMod.php?var=gfs_sfc_mslp&hours=hr096hr108

San Joaquin Valley Boundary Layer Mixing (CANSAC 00Z run):

SUNDAY MAY 2
No mixing predicted in the early morning improving to 5,000 feet by 17:00. Best heights over the central and eastern areas of the SJV.

MONDAY MAY 3
No mixing predicted in the early morning improving to 6,500 feet by the afternoon.

TUESDAY MAY 4 Mixing will steadily increase from north to south with the approaching trough. Maximum mixing heights during the afternoon hours will range from 5,000 to 7,000 feet.

WEDNESDAY MAY 5 Good Mixing conditions will occur across the District as a trough moves southward from the Pacific

San Joaquin Valley
Model Forecasts (NAM 12Z and GFS 00Z runs) and Air Quality:

SUNDAY MAY 2
Ridge over region so light winds will lend to deteriorating dispersion especially in the central and southern SJV. Expect Good AQ in the northern part of the District and Moderate AQ in the southern parts the District.

MONDAY MAY 3
Ridge still over region. Light winds lending to deteriorating dispersion. Moderate air quality expected across the SJV.

TUESDAY MAY 4
Trough moving into Pacific NW expected to inlfuence northern SJV with increasing surface wind speeds which will improve dispersion. AQ may improve to Good range in the north. Central and south still under light winds/poor dispersion due to the lingering

ridge so expect AQ to range from Moderate in the central SJV to potentially Unhealthy for Sensitive Groups in the southern SJV, especially Kern County. (low end risk)

WEDNESDAY MAY 5
Dispersion expected to improve with increasing surface winds due to the trough dropping further south. Good to moderate AQ anticipated across the SJV.

Central Coast - NO FORECAST TODAY (for met features see COAMPS slides in Southern Coastal Waters section)

SoCal Coastal Waters - Lee Eddington (Lee.Eddington@navy.mil)

See detailed slides and speaker notes in power point file

+ Sunday afternoon (00Z 03 May)

- Marine Low Clouds

  * CLR Crescent City to Point Conception
  * patchy CLR/SCT/BKN St/StCu Point Conception to San Diego

- SOCAL Marine Layer Winds

  * WNW 5-10 kts inner waters
  * WNW 10-20 kts outer waters

+ Monday morning (12Z 03 May)

- Marine Low Clouds

  * SCT/BKN St Crescent City to Point Arena
  * CLR Point Arena to Point Conception
  * patchy CLR/SCT/BKN St Point Conception to San Diego

- SOCAL Marine Layer Winds

  * ENE-ESE 5-10 kts inner and outer waters

+ Monday afternoon (00Z 04 May)

- Marine Low Clouds

* SCT/BKN St Crescent City to San Francisco
* CLR San Francisco to San Diego with patchy fog offshore

- SOCAL Marine Layer Winds

* WNW 5-10 kts inner and outer waters

+ Tuesday morning (12Z 04 May)

- Marine Low Clouds

* CLR Crescent City to San Francisco
* BKN/OVC St San Francisco to Point Arguello
* CLR/SCT St Point Arguello to San Diego

- SOCAL Marine Layer Winds

* LT VAR 0-5 kts inner waters
* WNW 10-20 kts outer waters

+ Tuesday afternoon (00Z 05 May)

- Marine Low Clouds

* CLR Crescent City to Point Arguello
* SCT/BKN St Point Arguello to San Diego

- SOCAL Marine Layer Winds

* W 5-10 kts inner waters
* WNW 10-25 kts outer waters

+ Wednesday morning (12Z 05 May)

- Marine Low Clouds

* CLR Crescent City to San Diego

+ Wednesday afternoon (00Z 06 May)

- Marine Low Clouds

* CLR Crescent City to Palos Verdes
* SCT/BKN StCu Point Palos Verdes to San Diego

South Coast - Kevin Durkee (kdurkee@aqmd.gov)

- Sunday: coastal eddy of so cal coast; sunny skies after morning clouds; relatively cool temps; marine layer ~ 3000' deep; good ozone with a couple of moderate areas
- Monday: weak offshore gradients & ridging aloft; warming & subsidence; shallower marine layer for AM clouds at beaches; Monday likely warmest day of next few; weak afternoon sea breeze; Moderate ozone levels
- Tuesday: ridge breaks down Monday night for deeper marine layer with stronger inversion; onshore flow; cooler temperatures; moderate ozone & PM2.5, likely some ozone into high desert
- Wednesday: weak trough; stronger onshore push; some moderate AQ inland, but mostly good
- Thursday & Friday: warmer as trough & onshore flow weaken; temps low-80s inland valleys; ozone increases into the weekend